ARCHITECTURAL CONCRETE

VOLUME SIX NUMBER FOUR


Shangri-La
ARTMENT

Architectural CONCRETE

Apartment in Santa Monica

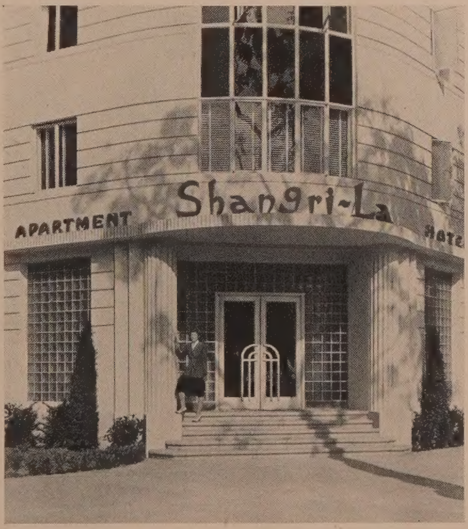
The Design of Shangri-La

By William E. Foster*, Architect

SHANGRI-LA, the newest apartment hotel in Santa Monica, Calif., was not copied from or inspired by any building in this country or abroad. Its design is simply the result of applying modern, functional design to a very exacting set of requirements. The owner's first wish was to build a much smaller structure in the Spanish style. This is mentioned to show how far logical planning will lead if it is followed to its ultimate conclusion.

Since the Shangri-La was built for investment, low cost and high rentals were the things most to be considered.

The site's greatest asset is a superb ocean view. Obviously the thing to do was to have all apartments on the ocean front. This meant that all apartments must be on one side of the building, eliminating at once the possibility of a center hall. In lieu of hallways, wide exterior galleries were used. These galleries turned out to be the most striking feature of the plan; in fact, they are the key to the whole solution of the problem. By their use it was possible to have all apartments with exposures both in front and at rear of the building. This provided through draft and made it possible for all living and bedrooms to face the ocean. Only kitchens and bathrooms face the court.



Main entrance to Shangri-La Apartments. On the facing page is same view at night.

In general, the plan of the building is L-shape, and as the depth of the building is but 35 ft. there is an open court behind the building about 105 ft. square. Below this court is a garage that will accommodate 62 cars—one for each available apartment in the building. Above the garage the court itself is treated as a recreational area with gardens, game courts and lawn furniture.

Because of its narrowness and height, the building might have offered difficult problems in earthquake resistance had not cross walls of concrete been used between each apartment from front to rear. These walls also serve to prevent sound from passing from one apartment to the next.

Concrete was used for the construction because it was by far the most suitable material with which to construct the building as designed. The structure is as nearly firesafe as any building can be, and it has been designed to be as earthquake resistant as any building in California.

Of the 62 rentable apartments, 11 are two-room apartments and 49 consist of three rooms. There

*Beverly Hills, Calif.

are two large penthouse apartments. Although the building has been opened but a short time the owners are delighted with the occupancy and the rentals obtained. Like that other Shangri-La, the mystic kingdom somewhere in Tibet, people like to come here and stay.

Exclusive of land and furnishings, the building cost $250,000 or roughly $3.50 per sq.ft., a very reasonable price for a Type 1 firesafe building.

Structural Design—Shangri-La

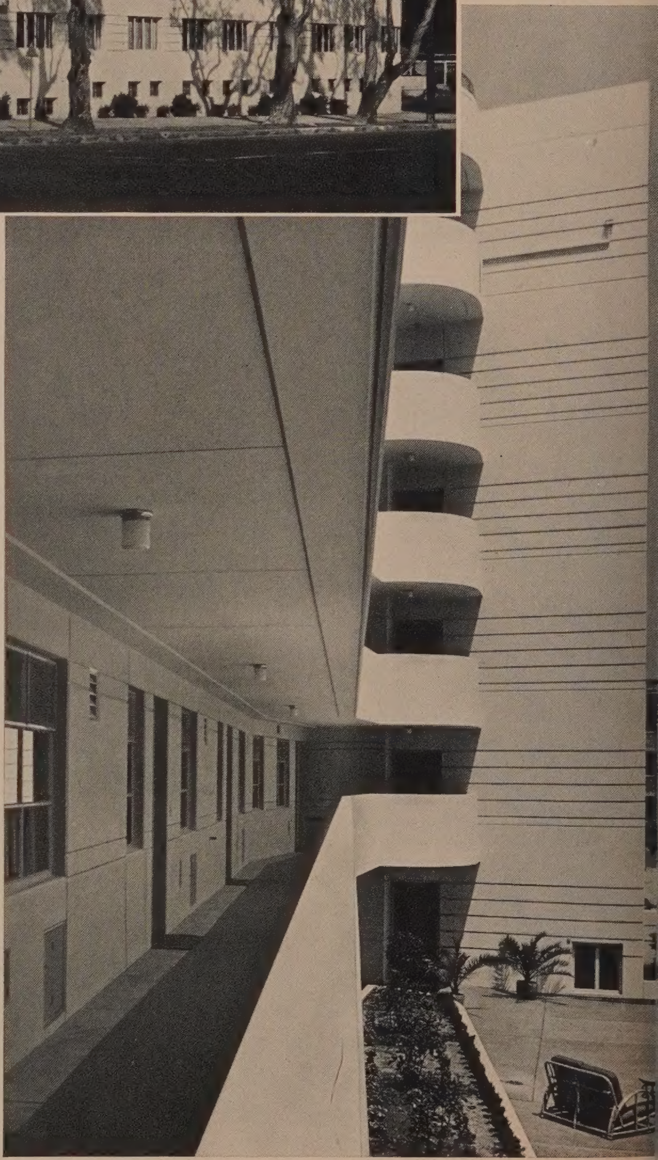
By H. C. Whittlesey*, Structural Engineer

SHANGRI-LA Apartments was designed as a seven-story building with reinforced concrete bearing walls and concrete slab and beam floors. The city of Santa Monica classified the building as Type 1 construction under the building code of the Pacific Coast Building Officials Conference, and logically so since there is probably no more fire-resistant structure in the country.

Running through the building from front to rear, and separating each apartment, are cross walls of reinforced concrete. These stiffen the structure against earthquake stresses and have the additional advantage of providing a high degree of sound insulation.

The minimum thickness of concrete walls used was 8 in. The code allows this thickness for a height of 65 ft. providing the compressive stress does not exceed 500 p.s.i.

*Los Angeles, Calif.



All apartments in Shangri-La face the Pacific Ocean. For this reason all corridors are at the rear in the form of wide exterior galleries over-looking a broad courtyard.

for 2,500-lb. concrete. Actual stresses were around 100 p.s.i. Having a few walls around the center tower that exceed the 65-ft. height, all basement cross walls were made 9 in. thick for uniformity.

Front and rear walls are 10 in., and all small piers between openings are designed as columns. The horizontal steel in the exterior walls is concentrated at the head and sill of the openings. In general this comprises two 7/8-in. round bars at each point in the first story and two 3/4-in. round bars for all spandrels above. Vertical reinforcement at each side of wall openings is generally two 3/4-in. rounds in all stories.

From a seismic point of view, each wing of the building is stiffer in the transverse direction than it is longitudinally. For this reason it was decided to omit all expansion joints and maintain continuity throughout the structure. However, the principle of continuity was not used in the design, except that the slabs and beams were designed as continuous. Bending was not taken into the walls or columns except for the top penthouse, which was designed as a rigid structure. The garage roof is separated from the main building by construction joints, but the slab steel dowels this joint.

Concrete was placed for the main building by alternating between the two wings, thus keeping the construction crews continuously occupied. The floor slab was keyed the full length of the joint between the two wings.

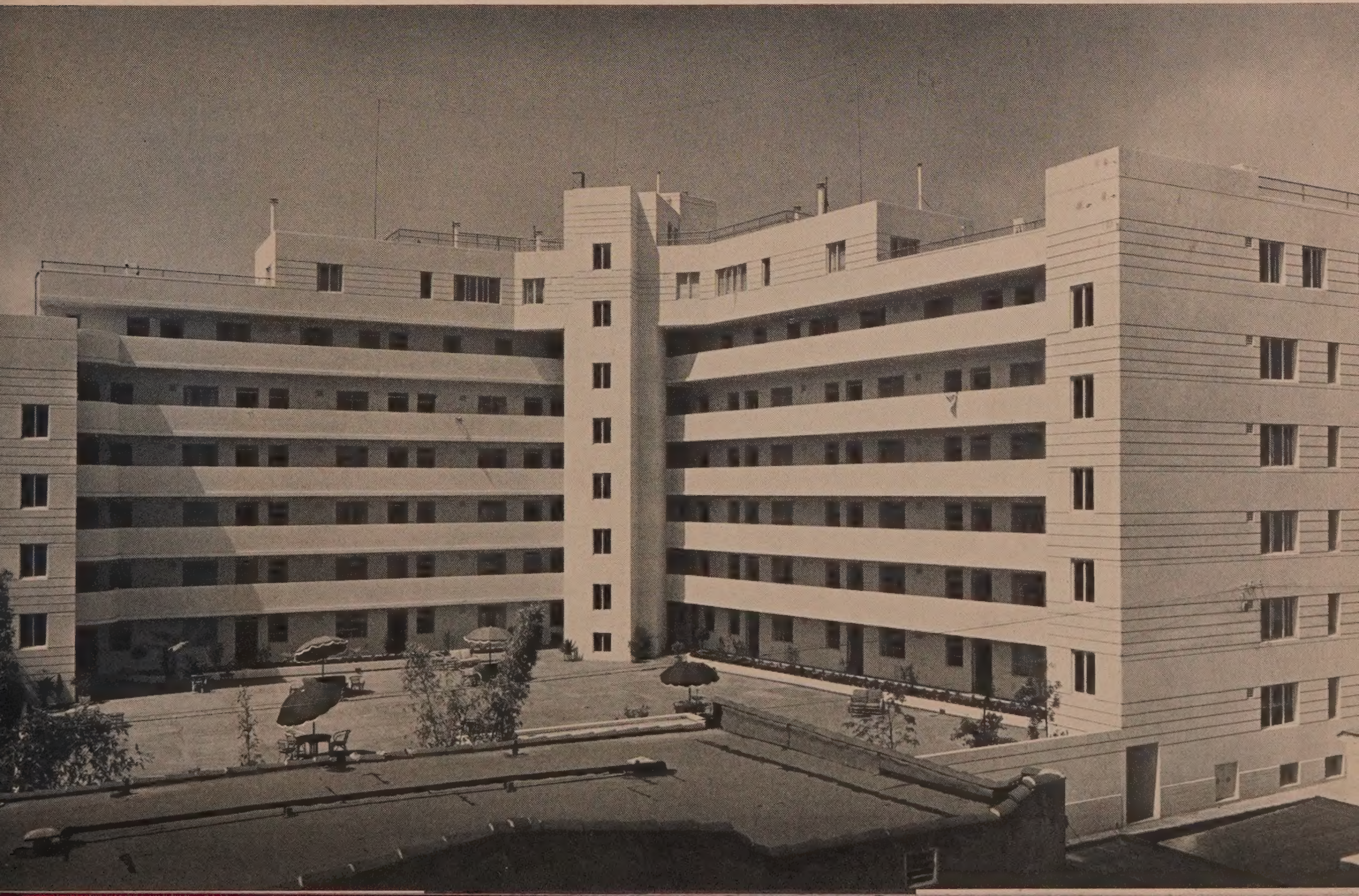
For architectural reasons it was desirable to have the horizontal construction joints in the front walls occur at the window heads and sills. This was accomplished by first placing the spandrel section to a point 6 in. above the floor line, allowing the concrete to flow out on the slab a short distance. After this portion had hardened slightly, the section was filled to the sill line. As soon as possible, usually within two hours, placement of the slab was continued.

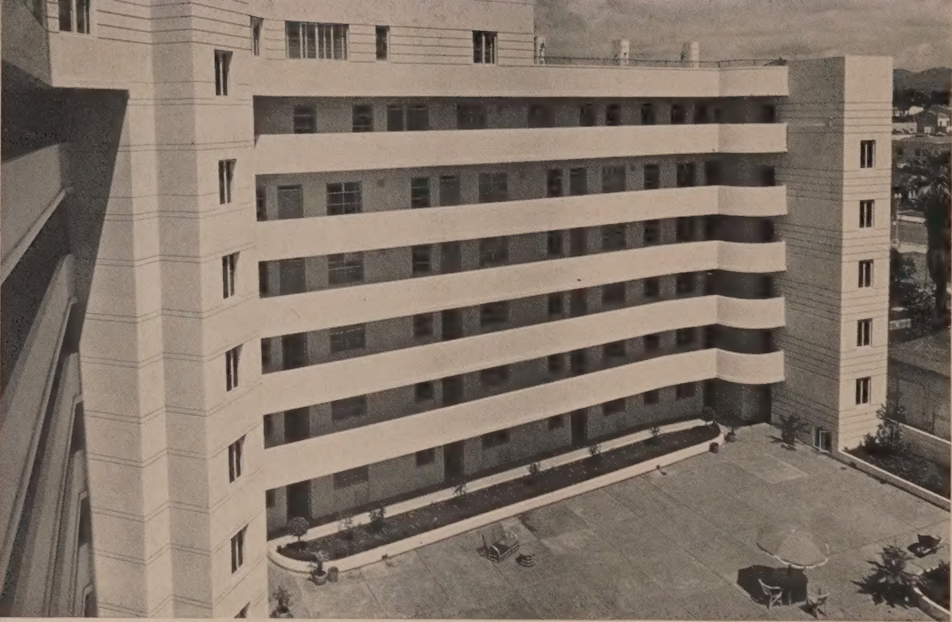
Interior walls and columns were placed to a point 2 in. above the floor line. This formed a shoulder to fix the location of the next lift of forms. The 9-ft. story height was made possible by arranging the beams over the partitions and applying the plaster ceilings directly to the slab.

The excellent results obtained in the placing of the concrete are entirely due to the vigilance and skill of one man, A. N. Tims, superintendent. He was able to convince the architect, engineer, owner and everyone else concerned with the job that his methods would produce satisfactory results; and he carried the work along in his own way to a splendid conclusion.

A few of Mr. Tims' tricks for obtaining a good surface are worth noting. After placing the concrete in the spandrel wall above the floor, the alignment of the spandrel was checked to a tight wire at all points, and slight adjustments were quickly made before the concrete had begun to harden.

The design of this most functional building was made by William E. Foster, architect of Beverly Hills, Calif. H. C. Whittlesey of Los Angeles was the structural engineer. Work was done by force account under the supervision of A. N. Tims of Los Angeles, employed by the owners.





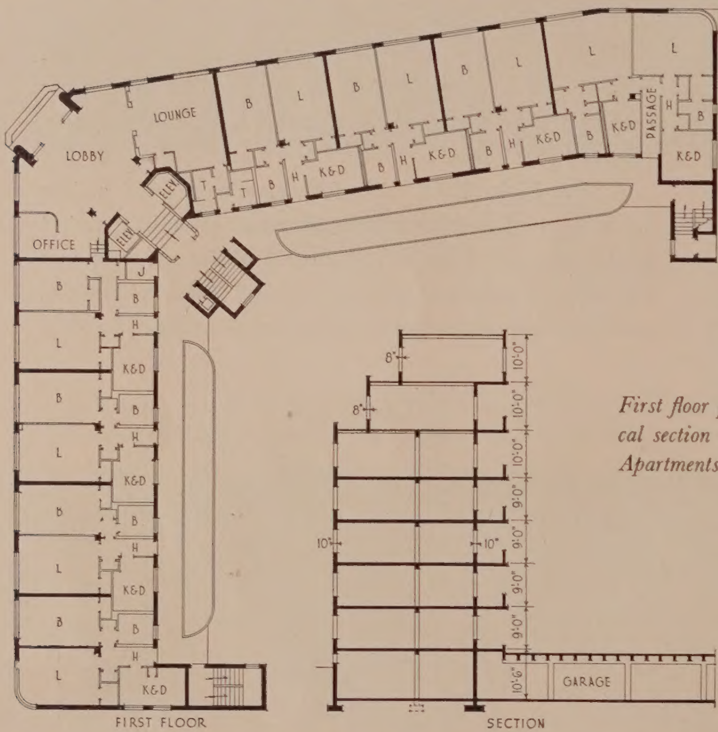
Courtyard behind the building is paved and planted as a recreation area.

I found him tapping the outside of the wall forms long after the concrete had been placed. He said this would eliminate sand streaks due to any water that might have crept up the outside of the wall during placing. Another thing Mr. Tims was careful about was to dry up the mix as the top of the wall was approached. This absorbed any free water that moved to the top.

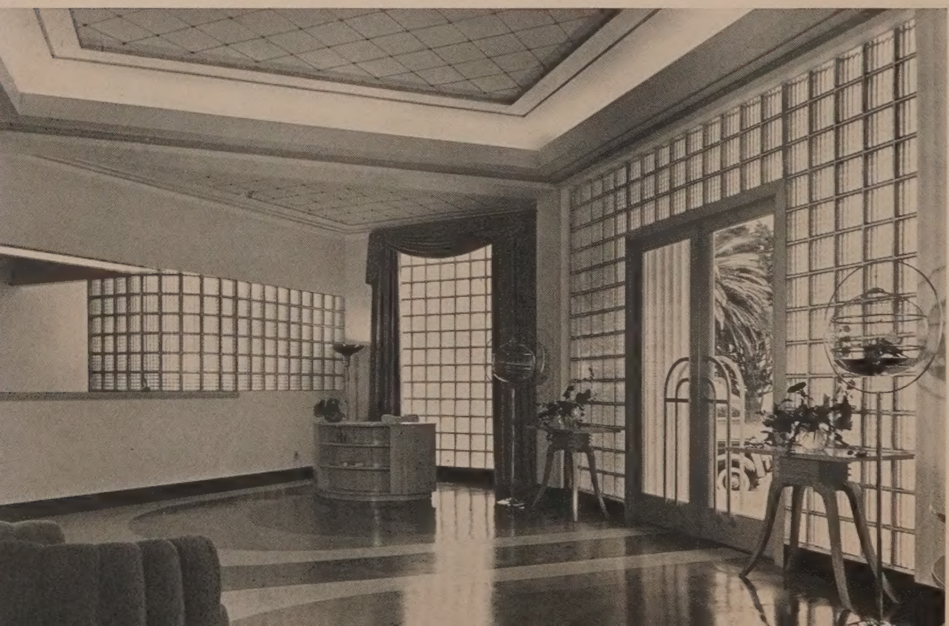
Forms for all exposed concrete surfaces were of ⅝-in. plywood backed up with 1x6 boards at 12-in. centers, with studding set 16 in. on centers.

Concrete was mixed on the site. Storage bunkers were provided for two sizes of coarse aggregate and one for sand. The mixer was set in a pit. The ramp for the trucks was formed with an earth fill between lagging. Pea gravel and asphalt sand were added in varying amounts as the normal grading of coarse sand and 1-in. gravel would change. This adjustment was determined on the job by visual inspection and the feel of the concrete. Portland cement content was kept close to 5.60 sacks to the yard and the cylinders tested close to 3,000 lb. at 28 days. The design was based on 2,500-lb. concrete.

Slump varied from 3 in. on floor slabs to 6 in. for walls. A vibrator was used on all floor slabs and on all walls not exposed. It was found that air bubbles were more pronounced on the plywood surface when a vibrator was used, so its use was discontinued after the first placement of exposed walls had been stripped.



First floor plan and typical section of Shangri-La Apartments.



Lobby furnishings carry out the modern feeling of the exterior design.

The State Department of Archives and History Building, Montgomery, Ala., is architectural concrete. Its design is Greek Revival, matching the old Capitol Building (below). Warren, Knight & Davis, of Birmingham, were the architects. All work was done by WPA labor.

Greek Revival in Montgomery

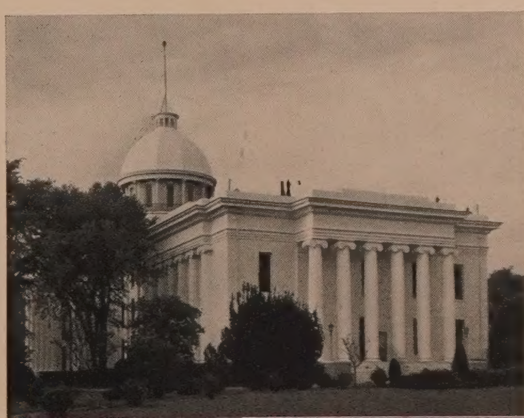
By W. T. Warren*, A.I.A.

IN 1928, Olmstead Bros. of Boston were commissioned by the governor of Alabama and the Capitol Building Commission to prepare a long-time program of improvement and beautification of the State Capitol at Montgomery. The program approved envisages the acquisition of land on the great square surrounding the old Capitol built in 1851, and building thereon suitable structures to house various state offices and institutions as needed and financing is made possible. While this plan set up no rigid requirements for architecture, it was implicit in the spirit of the plan that future buildings conform and harmonize with the classic style of the historic old capitol which was once the seat of the Confederacy.

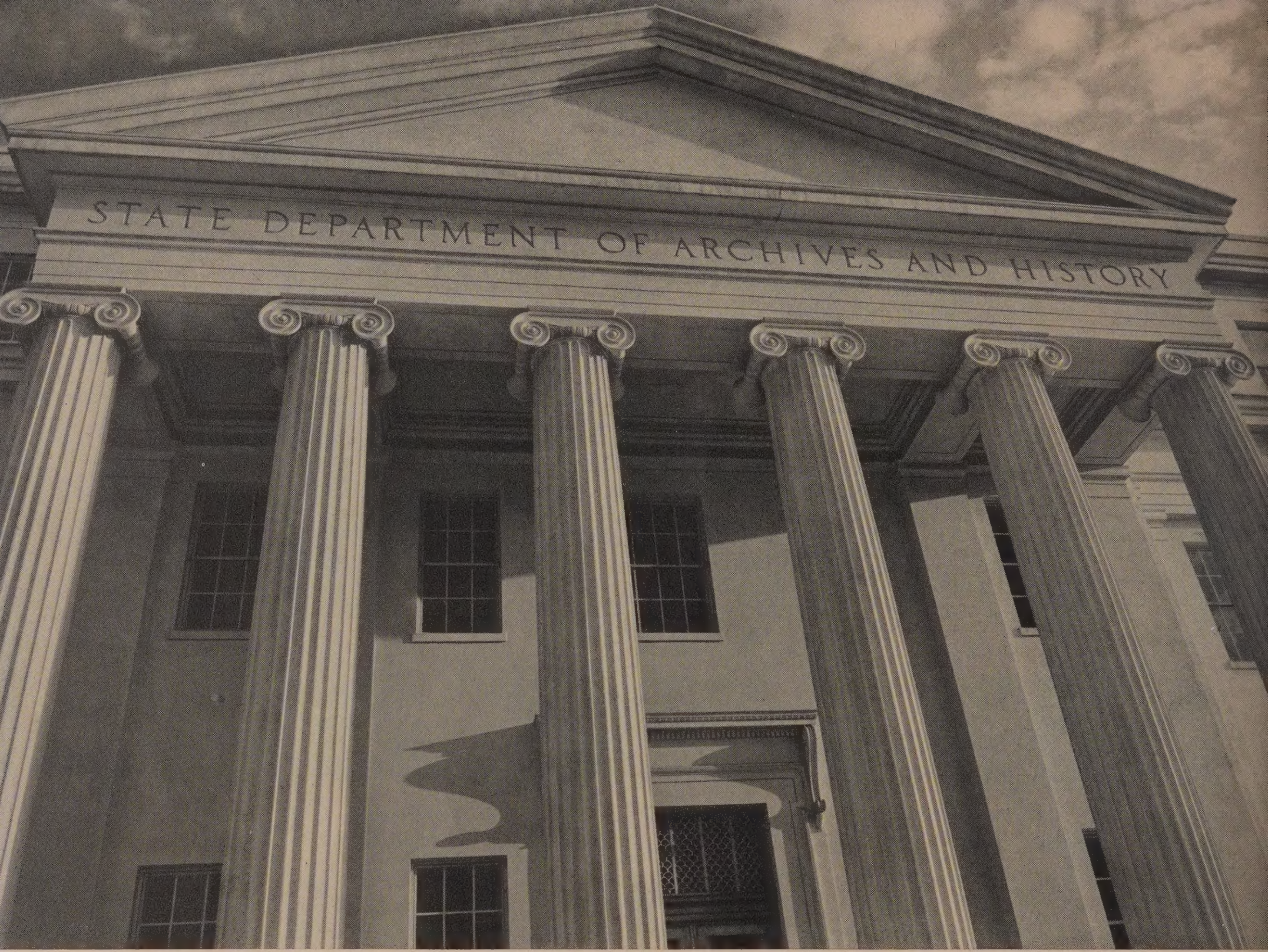
In 1937 the first of these new buildings was completed for the State Highway Department. This office building (Architectural Concrete, Vol. 3, No. 4, page 12) was built of architectural concrete by WPA labor with such eminently fine results that when construction of a proposed State Archives Building was decided upon in 1938, concrete was the natural choice of material.

The Archives Building, or rather the main portion of it, has just been completed and opened to the public. At some future date wings will be added

The old Capitol of Alabama was erected in 1851.



*Warren, Knight & Davis, architects, Birmingham, Ala.



Column shafts, capitals and letters—sharp, clean and as finely molded as the most expensive cut stone—were all cast in place with plaster waste molds or milled wood forms. Careful attention to placing the concrete resulted in perfection of classic details.

to the east and west sides. The main building, however, is well proportioned and balanced, and for purposes of utility and appearance is a complete structure.

The architectural style of the new building is Greek Revival, based on the old Capitol which it faces. The fluted columns, with Ionic bases and capitals are, of course, the dominant feature of the building and a notable triumph in concrete forming.

There are 12 of these columns in the building in groups of six to form the porticos of the two main facades. To design them in the Greek tradition, the fluted columns 35 ft. high, required a perfectly tapered entasis from base to capital. This at once presented a problem in construction. Should the columns be cast in sections and erected? No, that would be most difficult considering the labor involved and would be out of harmony with the type of construction. Should the columns then be cast in place? They must! But how? We floundered about for a time considering sectional forms of metal and of wood, all of which were abandoned because of technical difficulties. Finally, Hartman Lumber Co., of Chicago, declared they could and would provide forms for the entire length of the columns. They proved they could do just that, and three column forms were purchased.

The columns are 4 ft. 1 in. at the base, tapering in a graceful curve to 3 ft. 6 in. just below the Ionic cap. They are hollow with an 18-in. pipe core. Concrete for the columns was placed in two lifts, the first through a manhole half-way in the length of the form, and the second from the top. A worker in the hollow of the inside form, puddled the concrete against the outside form and around the reinforcement. As the photographs reveal, the workmanship was excellent. The columns are as perfect as finely and expensively carved stone. The three forms were used four times each on the present work. They have been packed away carefully for use in casting 16 additional columns

required for the two wings when erected.

The Archives Building is three stories high, erected on a 175x74-ft. floor plan. Before the main facade there is a 61x174-ft. terrace. All floors are concrete and the walls throughout are furred with 4-in. lightweight concrete units, and plastered. The building is as fire-safe as it is possible to make it, for as an archives building it will house precious documents and relics that could be lost completely in a fire.

Plywood of ⅝-in. thickness was used for all forms, the construction joints being generally hidden in the architectural details of the walls. The handrail, with its repeated grille motif, was cast integrally with the retaining wall of the terrace. All exposed concrete surfaces were rubbed to a very light, uniform finish which matches well the white painted brick and stucco Capitol Building.

The excellence of the results obtained is due to careful application of the architect's knowledge of the nature of concrete as a

A worker in the hollow section of the column form carefully puddled the concrete into place. The three column forms used on this work will be used for 16 more columns when wings are added to the building.

two lifts. Each column has an 18-in. hollow pipe core.

material of design, followed by thorough supervision of the construction. The Highway Building and now the Archives Building demonstrate thoroughly the appropriateness of architectural concrete to classical forms. These buildings also prove that when the technique of concrete design and construction is mastered and faithfully carried out, the highest expectations can be realized at great economy.

In its present state, the Archives Building represents an expenditure of approximately $500,000. The addition of wings will cost about $300,000. The entire project, when completed, will represent an expenditure of nearly $900,000 for land, building and equipment.

public County
urthouse—
nsas

By R. E. Mann and A. R. Mann*, A.I.A.

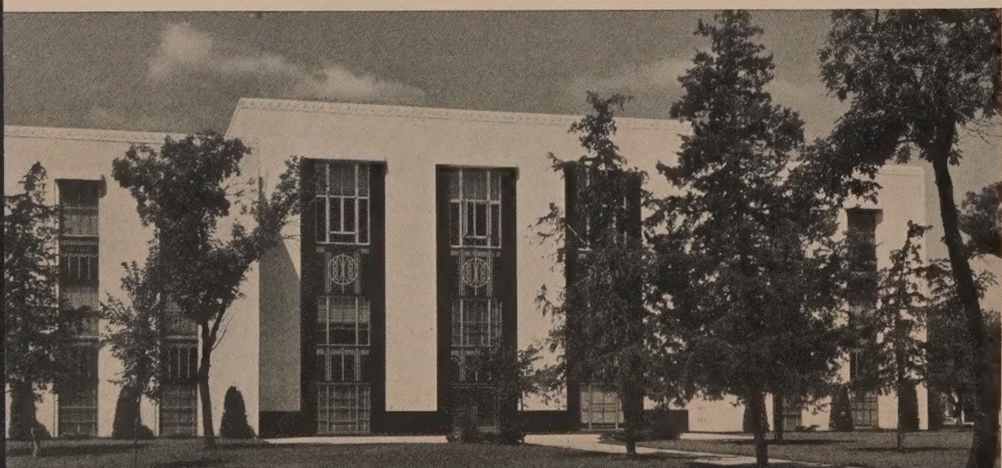
k civilization a style of architecture evolved which
d buildings of such beauty and refinement that they
n now considered the ultimate of the building de-
skill. Within the last few decades another style has
the process of evolving. It is known variously as
, contemporary, international and functional—and
has many admirable characteristics. An effort has
ade to combine the advantages of both the old and
v architectures into the design of this courthouse.
scope of county government has been broadened
rably during the past decade. New social and agri-
departments have been established, and other
ents enlarged. So rapid and unpredictable has been
wth of county functions that a design for a building
e them all could not be considered adequate that
project departmental needs into the future. As the
on of space for the various departments developed
nal plan, the external appearance, or architectural
r of the building, was always in our minds. This
ly essential to a building of good appearance, but
e requisite to a well-ordered functional plan.
thought and investigation was given to the material
truction. At the outset, reinforced concrete was
upon for the frame, floors and roof for the sake of
ty. Further investigations into costs and character of exterior wall materials resulted in the use of architectural concrete.

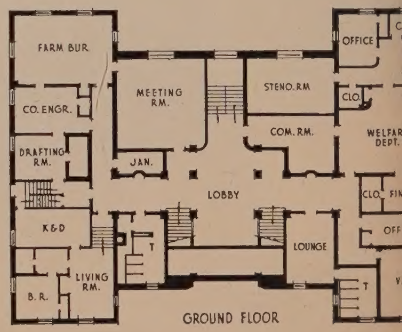
As this type of construction had not been, at that time, in extensive use in this section of the country, the archi-

in financing.

The new Republic County Courthouse is the result of two architectural schools of thought. In the Golden Era

*Mann & Co., architects and engineers, Hutchinson, Kan.





The same careful attention was given to the design of the rear of the building as to all other elevations.

The courthouse comprises four floors, the jail occupying the top story. There is space for future expansion of county offices. Designed by Mann & Co., architects and engineers of Hutchinson, Kan., it was built by Peterson Construction Co., of Salina, Kan.

tects traveled widely to study the more important examples of architectural concrete buildings completed, or under construction, by those experienced in this type of work. Information thus obtained was used in the design of this building with a great saving in time and ultimate costs.

Exterior walls of concrete have a minimum thickness of 10 in., and all are lined with 1½-in. cork board insulation which was placed inside the forms before concrete was placed. This cork formed a good plaster base.

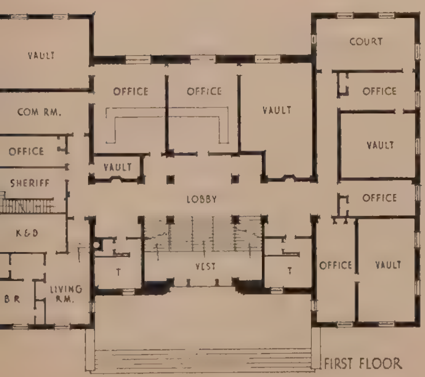
Exposed surfaces were formed against ¾-in. plywood arranged in horizontal panels. Plaster waste molds were used to form the decoration along the top of the parapet wall. By painting these molds with aluminum paint and clear cupgrease, it was possible to reuse the same molds two and three times.

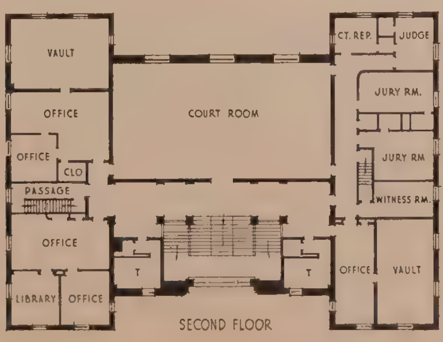
Accentuation of window openings was obtained by the use of black granite spandrels. Decoration of the granite, such as incised lettering for township names, was accomplished by sandblasting against the highly polished surfaces. The large letters over the main entrance are cut from pink granite and serve to identify the building as well as form a screen for the jail in the top floor.

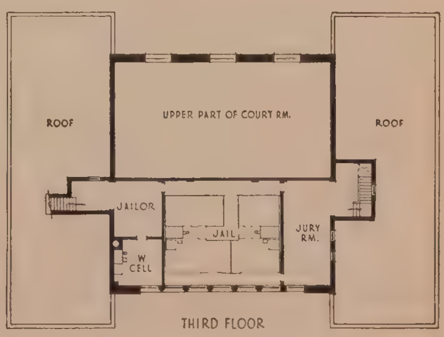
Finish applied over all concrete floors in offices and courtrooms is rubber tile. Corridor floors are terrazzo and the foyer and stairs are topped with marble. Wainscot around foyer, stairs, corridors and toilets is Carthage marble, with walnut Flexwood used for this purpose in the courtroom.

The exterior walls of the building were finished with three coats of stone-white cement paint, a color which does not dazzle in sunlight but does bring out the contrasts between the various design elements of the building.

General contract, including plumbing, heating and electrical trades, was $219,113. Total cost, including furnishings, equipment, landscaping and architects' fee, amounted to $248,540.

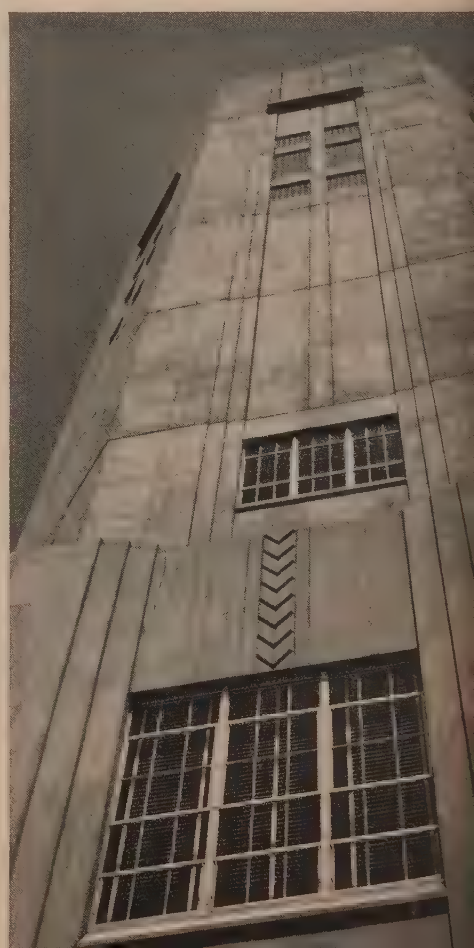






This imposing structure is the Municipal Building, Town of Lake, Wis. Its height is due to a concrete curtain wall built around the supporting structure of a water tank. Concrete wall for the tower (right) is 6 in. thick.

Municipal Building—Plus



By William D. Darby*

ONE of the most unusual municipal buildings in the country is located at Town of Lake, Wis., population 5,000. The casual and not too observant stranger, on first seeing the building, might wonder why such a relatively small town needs a skyscraper city building. But a closer look would disclose a silvery dome bulging from the top, and this would mean that the tall, octagonal tower is hiding the legs of a water tank. Then it would be realized that in one large, monumental structure many purposes are served and many problems are solved—with great economy and efficiency.

The project was undertaken after the State Board of Health ruled in 1936 that Town of Lake must immediately acquire a water supply for its residents. No arrangement could be made to purchase water from nearby Milwaukee, and the town was too far from Lake Michigan for an economical crib and intake system. It was decided to go underground for water, and a well was drilled to a depth of 1,860 ft. The water was good and plentiful, but needed

*Consulting engineer, West Allis, Wis.

softening and a place for storage. This required a water reservoir with sufficient head to supply the town.

Ordinary steel water tanks, with their gangling skeleton supports, are not very lovely. It was when I was trying to find a method of covering up this type of a structure that the idea came to enclose the supports in a concrete shell, and to build around this tower structure the additional facilities needed for town offices as well as for pumping station and water softening plant. The idea was approved at once, and a PWA grant was obtained.

The dominant feature of the building is the octagonal concrete shell which encloses the steel frame and the lower portion of the elevated tank. The ground floor of the building consists of four 50x50-ft. quadrants surrounding the tower and built integrally with it in architectural concrete. These quadrants house town hall, supervisor's offices, water department, softening plant, pumproom, garage, health office, public works, police department and jail. A council room, seating 300, is located on the second floor in a space 60 ft. in diameter. A spacious corridor provides easy access to all parts of the council room. A third and fourth floor remain unfinished, but stairs, elevator well, floor slabs and all conduits are ready for finishing these areas when they are needed.

The water tank and its support were naturally erected first and the concrete shell and quadrants were built about them. Since the structural steel of the tower carries all loads above the ground floor, concrete walls of the tower are but 6 in. thick above the second floor. They are heavily reinforced. Copper expansion joints extend around the tower at intervals of 14 ft., and there are vertical expansion joints at regular intervals.

To emphasize the vertical mass of the tower, the corners of the octagon were stepped out to produce the effect of pilasters. These are not thickened sections, but are built out maintaining a thickness of concrete of about 6 in. Structural plywood, ¾ in. thick, was used for all concrete wall forms. Concrete was generally placed by hand, with canvas tremies used to deposit the concrete in the thin wall sections. Long-handled spades were useful in working the concrete about the steel. There was practically no honeycombing.

Forms were removed after four days. The walls have not been painted but were simply cleaned by applying grout which was worked over the surface of the walls by means of wood floats and fine stones. Finally the grout film was removed with burlap cloth.

Cost of the concrete structure was $161,500, a small part of the $1,300,000 total project which includes drilling, building a bridge, erecting spur tracks, and installing equipment.

The completion of this building has been a great stimulus to civic pride in Town of Lake. Standing tall on the highest rise of ground in a community so recently cut out from a sprawling rural area, it symbolizes unity and calls out for a municipality to grow up to it.

William D. Darby, consulting engineer of West Allis, Wis., conceived the idea of combining water tank and town offices in one economically built, efficiently planned structure. Contractor for the concrete building and tower enclosure was O. W. Wierdsma, Wauwatosa, Wis.

One of two main entrances to the auditorium-gymnasium built for Georgia School of Technology at Atlanta.

Gymnasium fo

By Matt

COMPLETION of a gymnasium-auditorium structure on the campus of Georgia School of Technology at Atlanta, late in 1939, filled several long-felt needs. Foremost of these was the need for a centrally located athletic plant, and a place for the adequate assembly of the 2,200 students of the school. The building also provides a swimming pool and, as the photographs reveal, one side of it serves as a rather spacious score board for football games.

The building was designed by Bush-Brown, Gailey & Associates—all members of the Department of Architecture at Georgia Tech.

One might expect that a group of architectural professors and instructors would have a well-turned out name for the style of their building—but not so! A building that appears to serve a purpose well does not need a name. In fact, to designate the style of this building properly would require a very long title, such as, "An expression of a useful form with texture and color characteristic of the material used." That would mean nothing unless one saw the building and its site; and would not need to be explained if the conditions were observed.

*Assistant professor, Department of Architecture, Georgia School of Technology, Atlanta, Ga.

Rear of the building faces the open end of a great concrete stadium. The window areas illuminate the swimming pool and the parapet wall is useful for keeping the scores Georgia Tech's fine football teams run up against all comers.

Georgia Tech

RGENSEN*

The site was a determining factor in making the building what it is. First, the building would complete the closure of an area already enclosed on three sides by a large concrete stadium. This would suggest, for the sake of harmony of materials and vigorous form, that the building should be of concrete, and of a color and texture not too different from that employed

A form board marked finish was selected for the wall texture by Bush-Brown, Gailey & Associates, architects for the building and members of Georgia Tech's architectural department. H. B. Nelson Construction Co. of Atlanta was the contractor.

Decorative detail was limited to precast grilles over entranceways. All other surfaces were finished by a light spatter coat of portland cement stucco which enhanced rather than covered the joint lines of the form boards.

on the stadium. The site also set a limitation on the size of the building, and effort to utilize the maximum area determined the shape—for it entirely fills all available space. Had more space been available, the building probably would have been very different. Architecture depends on so many things.

One of the most characteristic and pleasing textures of concrete is that produced by form boards when not spoiled by attempts to efface joint marks. Such a texture can be enhanced by application of a light spatter-dash stucco coat which strengthens rather than covers the joint marks, and this treatment was specified for the building. With form, material and texture determined, the design was completed by a functional arrangement of openings, a bit of enrichment in the form of cast-in-place canopies and precast grilles over some entrances, and the arrangement of letters forming the name of the building.

The walls are 8 in. and 12 in. thick, depending upon the depth of reveals. Inside there is a basketball court with side seating for 2,200. When used as an auditorium, additional seating raises the capacity to 2,800. In the concrete floor of the gymnasium are wooden sleepers over which a wood floor is laid. The seating is arranged on concrete bleachers, providing clear vision. Floors in showers, dressing rooms and lobbies are finished with terrazzo.

The roof of the building is of precast concrete slabs on steel trusses.

The construction of this building on the campus provided classes in architecture an excellent field laboratory for the study of materials, concrete in particular.

Airport Buildings at Norfolk, Va.

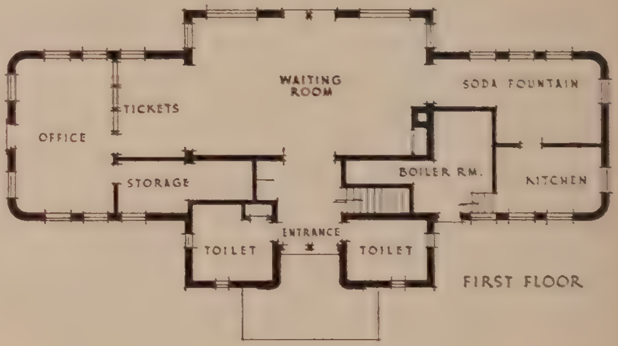
By Joseph W. Wells*

CONSTRUCTION of the Norfolk Municipal Airport on a site six miles east of the business district of this busy Virginia city was begun in the spring of 1938 as a WPA project. Plans were prepared by the Department of Public Works. The project included three runways averaging 4,000 ft. in length, and erection of an administration building and a hangar.

In a setting off by itself and away from other structures, no traditional architecture existed to which these buildings should adhere. The design of each building, therefore, was guided by an endeavor to express in a simple, straightforward manner, the modern material employed for the construction. This material was architectural concrete, selected for ease of construction, low maintenance, resistance to fire and weather, and for uniformity of appearance. The result was designs in the modern manner.

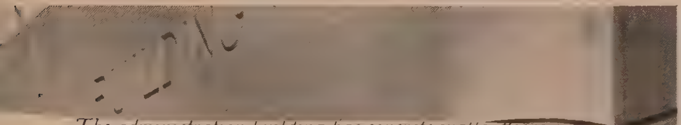
Space requirements in the administration building called for a waiting room, office, ticket office and lunch room on the first floor, and accommodations for offices of the weather bureau on the second floor. This determined a two-story central mass with one-story wings. The hangar has a width

*Assistant engineer, Department of Public Works; Walter H. Taylor, III, director.



The hangar at the new Norfolk, Va., airport has concrete walls. The 28-ft. clear height of the doors will permit servicing big passenger liners. Running the length of the hangar is a one-story office and shop structure.

ed a large airport with the most modern facilities. Architectural concrete was chosen for the administration building because it best fitted the modern design.
ied on in cold winter months, concrete being kept warm by steam during curing. A fine job of forming and finishing was done by WPA labor



The administration building has concrete walls, floors and roof.
it was erected as a WPA project.

manager's office. There are ample toilet facilities. The second floor is devoted to field operations offices including the United States Airways Communication Station. Control over the field is maintained from the observation tower.

of 120 ft., a depth of 100 ft. and a clear door height opening of 28 ft. The roof of the hangar is carried on structural steel rigid frames. On the side of the hangar adjacent to the field is a lean-to, approximately 24 ft. wide, running the full 100-ft. depth of the building. The lean-to, which has concrete walls, floor and roof, contains a field office, repair shop and storage facilities.

Ground floor slabs of all buildings were placed directly on sand fill. Second floor and roof of the administration building are concrete T-beam joist construction.

To achieve the smooth surfaces desired, all walls were formed against ⅝-in. plywood. Forms for certain features such as round corners and marquee were built at the mill. The horizontal grooves that form a band with the fenestration were made by attaching dressed lumber strips to the face forms. Only the seal of the City of Norfolk over the entrance required plaster waste mold work, and it stripped from the form without the slightest blemish.

The original mix was based on a requirement for 3,000-lb. concrete for all structural members. However, to assure maximum watertightness and durability, a mix of 6 sacks of portland cement per cu.yd., with 6¾ gal. water per sack, was specified. This resulted in a compressive strength of 3,500 lb. in 28 days.

Wall thickness varies from 8 in. to 12 in., the greater thicknesses occurring generally in the main facade of the administration building. Placing of the concrete was carried on under careful supervision and a good job resulted. After all forms were stripped the tie rod holes were filled and the buildings were wet down thoroughly and rubbed with abrasive stones. This was followed by a rubbing with burlap. The finish texture is smooth, clean and tends to a rather light shade.

In its completed form, Norfolk Airport is one of the most compact and efficiently arranged municipal airports in the country, and it is certainly one of the best in appearance. It serves an increasing amount of traffic along the busy air lanes to Washington, D. C.

Airport Buildings at Norfolk, Va.

By Joseph W. Wells*

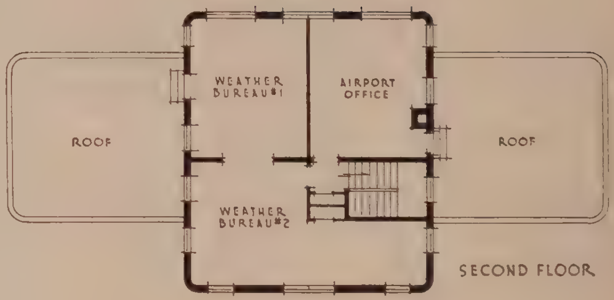
CONSTRUCTION of the Norfolk Municipal Airport on a site six miles east of the business district of this busy Virginia city was begun in the spring of 1938 as a WPA project. Plans were prepared by the Department of Public Works. The project included three runways averaging 4,000 ft. in length, and erection of an administration building and a hangar.

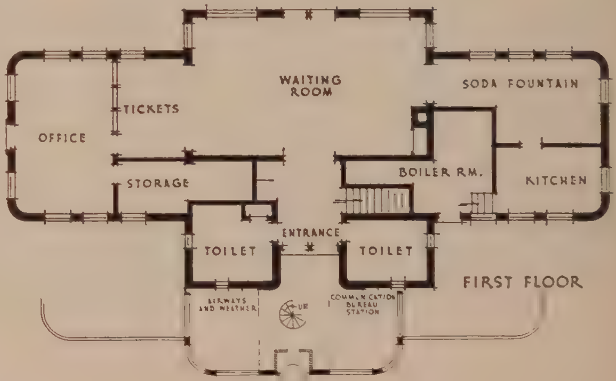
In a setting off by itself and away from other structures, no traditional architecture existed to which these buildings should adhere. The design of each building, therefore, was guided by an endeavor to express in a simple, straightforward manner, the modern material employed for the construction. This material was architectural concrete, selected for ease of construction, low maintenance, resistance to fire and weather, and for uniformity of appearance. The result was designs in the modern manner.

Space requirements in the administration building called for a waiting room, office, ticket office and lunch room on the first floor, and accommodations for offices of the weather bureau on the second floor. This determined a two-story central mass with one-story wings. The hangar has a width and commercial traffic, is in the tempo of this most rapid form of transportation.

In convenience, comfort and appearance the building is as sleek and trim as the great silver liners that swoop in upon us from the four corners of our world. This is good because people who use the airlines travel fast—even through an

*Airport manager.





SECOND FLOOR PLAN

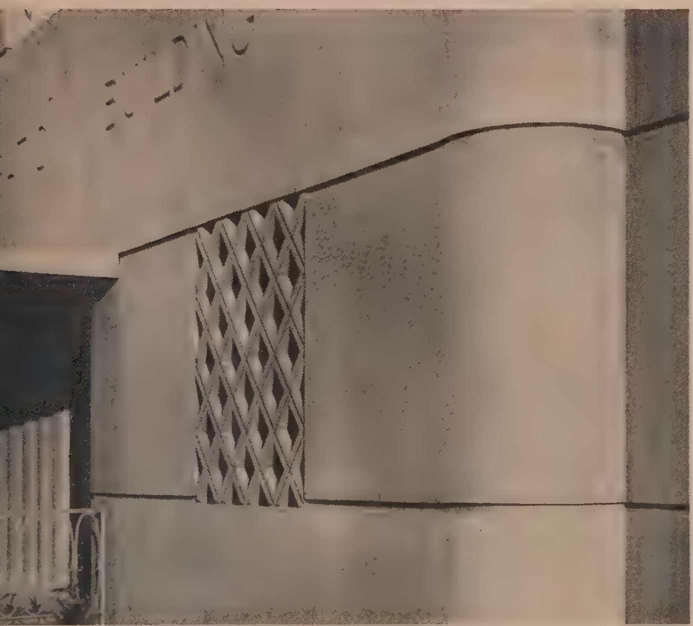
FIRST FLOOR PLAN

erior walls were formed against 7/8-in. plywood to achieve a smooth finish.

airport waiting room—and to leave a good impression on them requires something bold that is not overlooked in passing.

Spencer Weber, the Lansing engineer who designed our administration building, caught the spirit of modern flying in his design. And architectural concrete has caught his moving, fluid design and frozen it in graceful lines and masses.

ded a large airport with the most modern facilities. Architectural concrete was chosen for the administration building because it best fitted the modern design
ried on in cold winter months, concrete being kept warm by steam during curing. A fine job of forming and finishing was done by WPA labor crews.



Two grilles, one on either side of the main entrance, are the only purely decorative features of the design.

The building is three stories high, including a field observation tower. On the first floor is a large lobby with access from both the street and field sides of the building, a restaurant, ticket office, inspector's office and airport manager's office. There are ample toilet facilities. The second floor is devoted to field operations offices including the United States Airways Communication Station. Control over the field is maintained from the observation tower. Dropped ceilings throughout the building have made the structure exceptionally soundproof. Loud radio transmitters are not heard beyond the rooms in which they are installed.

One of the outstanding features of this administration building is the 50 million candle-power floodlight with a shadow bar which, when rotated from the tower of the building, casts a 60-ft. shadow in front of an incoming plane.

It may be of interest to note that the major portion of the construction was carried on during the coldest part of the winter of 1938. This did not delay the work and had no serious effect on the quality of the concrete, for live steam was forced into and around the building under a great craft paper envelope during curing. At any rate, the results are highly pleasing to officials of the airport.

We apparently are not alone in the belief that the modern, functional design of our building is in keeping with the spirit of aviation because air travelers are generous with compliments, and we are getting requests for plans from various sections of the country where new airports are proposed.

The building was constructed as a WPA project. Splendid cooperation from this agency was enjoyed throughout.

Administration building, one of six structures erected for San Pedro High School, Los Angeles. All of these buildings but one, a single-story industrial arts buildi tages in firesafety and earthquake protection. The entire school plant was designed by Gordon B. Kaufmann, Los Angeles architect. Two more buildings, to

San Pedro High School—Los Angeles

By Gordon B. Kaufmann*, F.A.I.A.

SAN Pedro High School, with six of its eight proposed buildings now occupied, will be one of the most complete school plants in southern California. It is arranged on a 1,500x450-ft. site which overlooks Los Angeles harbor, and which includes a spacious athletic field. Structures completed to date include administration, home economics, industrial arts and classroom buildings, and an auditorium and physical education structure. Another classroom building and a science building will be added when required.

All of the buildings except the industrial arts building which has steel stud and stucco walls, have reinforced concrete walls, columns and floors, and are designed to resist earthquake stresses in accordance with local and state requirements. Except for the auditorium, gymnasium and industrial arts building which have steel truss supported roofs, all roofs are of concrete joist and slab construction. Buildings of such construction naturally offer the maximum in fire protection.

The architecture of the buildings may be classified as a modern treatment of classical proportions, with neither influence dominating the design. All exterior surfaces are

*Los Angeles, Calif.

Plant layout includes large athletic field with physical education building adjacent.

of architectural concrete and offer maximum advan-
ded in the future, will complete the program.

finished with harmonizing shades of cement paint.

One of the important problems in early plan stages was to arrange the structures on the site for maximum utilization of space and easy communication between the various units without sacrificing daylight illumination in any of the buildings. This was achieved, as the layout photo reveals, by arranging the units so that shadows never fall on the main facades of adjacent structures. This scheme necessitated variations in the sizes and shapes of the different buildings, adding interest to the general appearance of the whole group.

The administration building is locate in the center of the site along the north south axis. To the west of it lie all aca demic buildings, and to the east are th physical education building and th athletic field. The administration build ing is a long structure housing all office a library, classrooms, and laboratorie In the part basement are craft shops an a central heating plant. All classroom and corridors are acoustically treate A wide range of wainscot, wall and cei ing colors is used throughout this build ing to provide a restful and refreshin change of atmosphere for both students and faculty.

To the north, and connected with the administration building by a covered arcade, is the home economics building. Here is located the cafeteria, kitchens, faculty dining room, and sewing rooms. When the entire plant is complete, all buildings but the gymnasium will be connected with the administration unit by arcades.

Along the south line of the academic court are a two-story classroom building and an industrial arts building of one story. The classroom building is quite similar in design and treatment to the administration unit, but the industrial building is strictly of factory type with skylights augmenting the wall illumination. This building is divided into six large shops.

The physical education building faces the administration building across a paved and planted terrace. This structure comprises a gymnasium flanked by one-story dressing rooms

Modern and traditional forms are combined in the design of the buildings which are characterized by uniformly fine execution of details. This is the northwest corner of administration building.

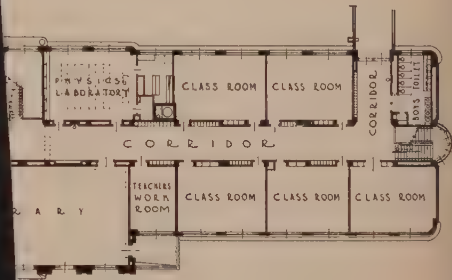
for girls and boys. The gymnasium floor is two layers of wood laid on a sand cushion on the concrete slab. Other floors in the unit are finished with tile. This building is so planned that an additional gymnasium unit may be added at some future date.

Two general types of foundations were used for the buildings—bored caissons with bell bottoms for the auditorium and gymnasium, and excavated spread footings for the other structures. The caissons varied in depth from 12 to 45 ft.

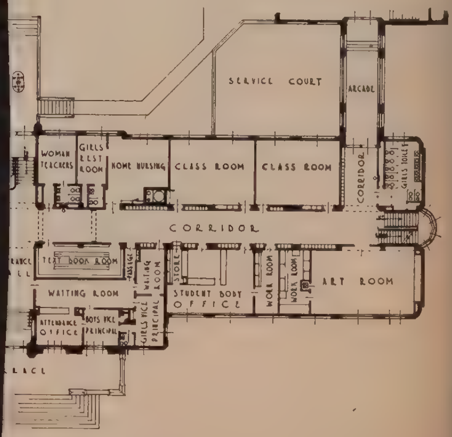
Exterior forms used throughout on all architectural concrete buildings were of ¾-in. structural plywood, detailed in sections so that stock widths of material could be used to form base courses and spandrels in such a way that no horizontal joints

The auditorium has a large stage suitable for the most elaborate stage productions. Masks of Tragedy and Comedy are molded in concrete over the entranceways.

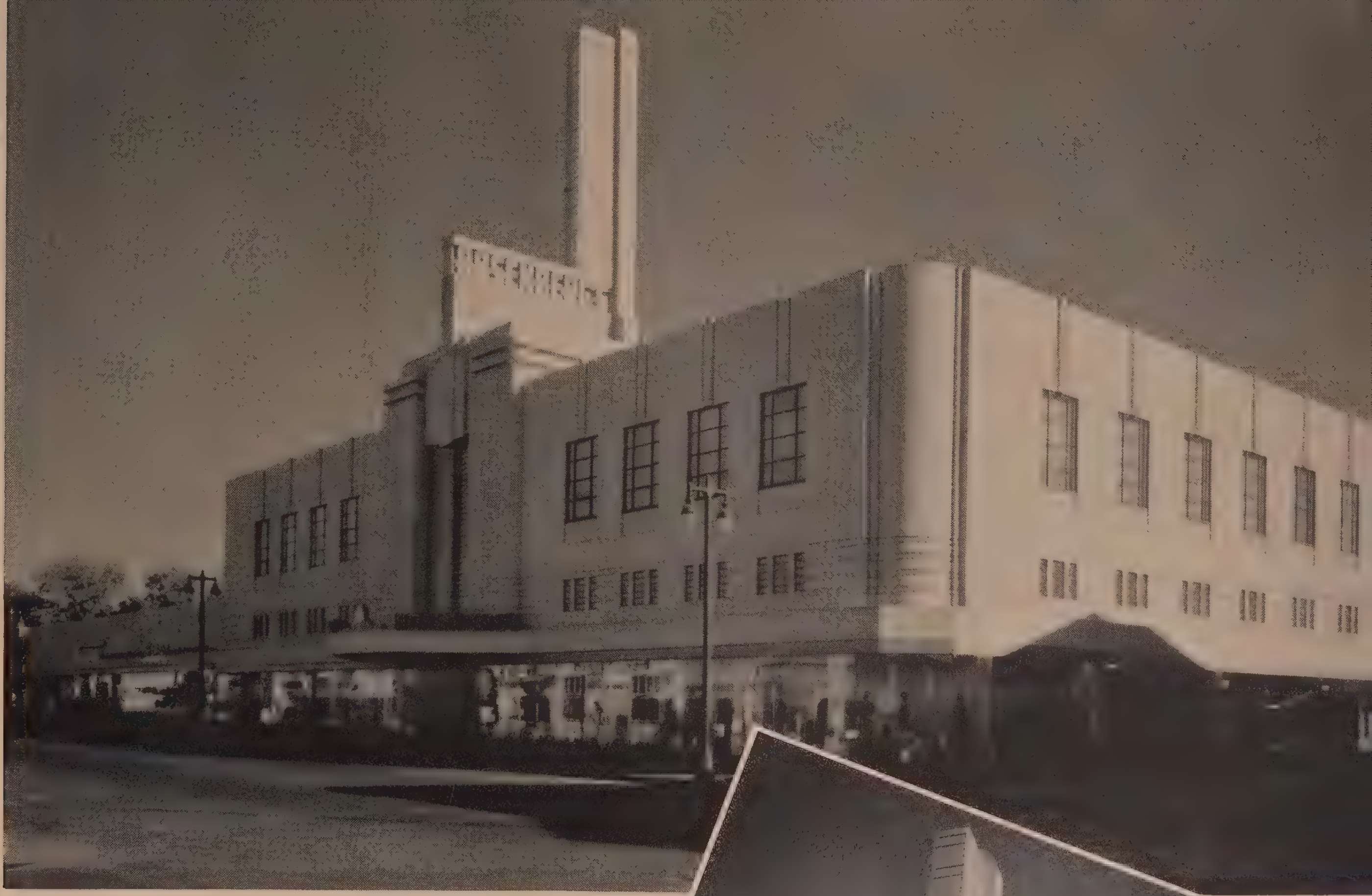
... building—floor plan.



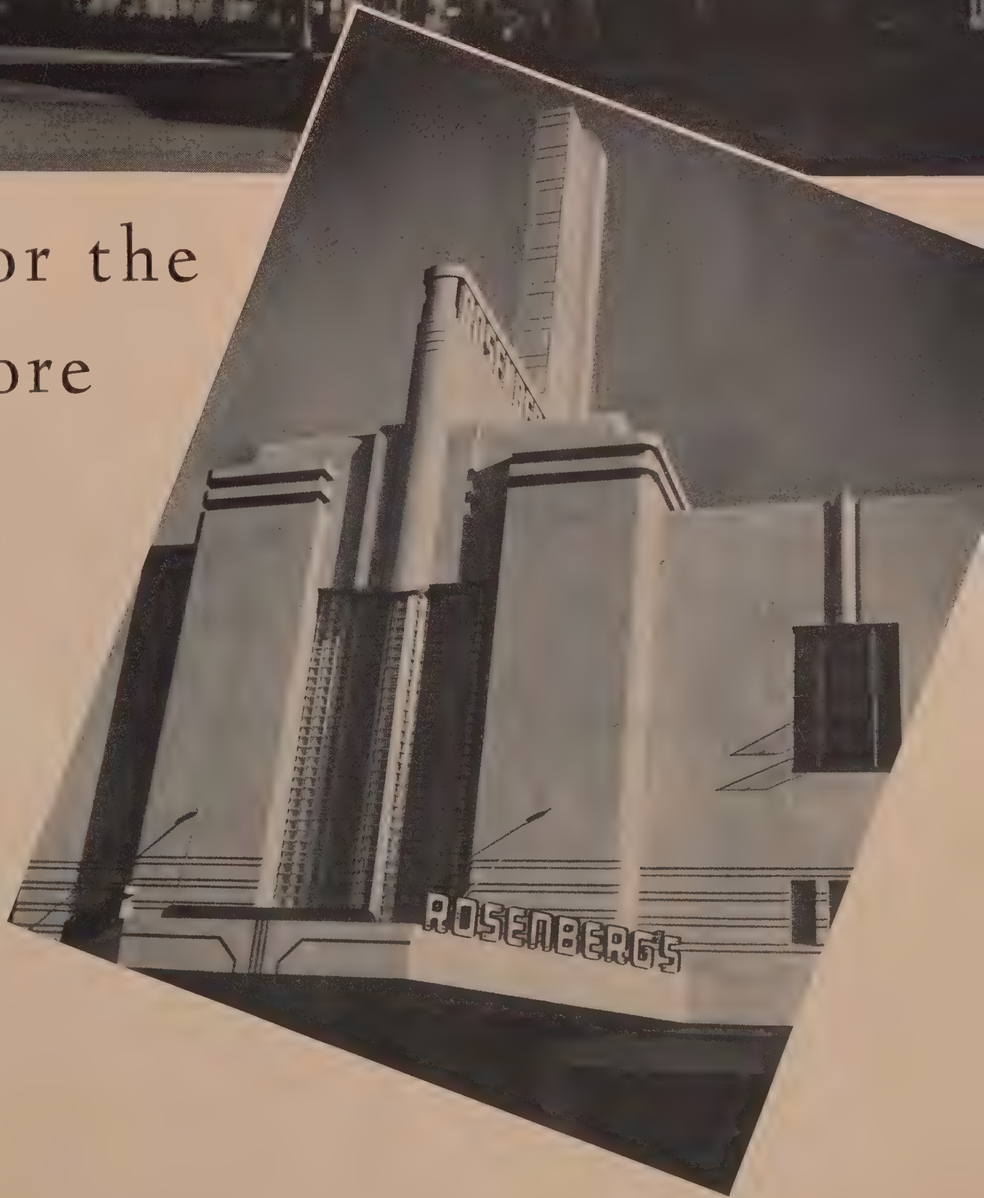
...ng—second floor plan.



...lding—first floor plan.



Concrete for the Modern Store



WITH a building of gleaming concrete, bold modern lines and a sign that is a landmark in the community, Rosenberg's Department Store has formed the nucleus of a new shopping center in Santa Rosa, Calif. The building replaces an old store structure that was destroyed by fire. The main portion of the building is 110x150 ft., two stories high with mezzanine and tower. A one-story portion, 90x120 ft., is designed for additional stories when necessary. The concrete walls are finished with smooth stucco in a light buff shade. Erected from plans prepared by Hertzka & Knowles, architects, it was built by Moore & Roberts, contractors. W. W. Breite was the structural engineer. All are of San Francisco.

New Hospital in Vancouver

By Frank Gardiner*, M.R.A.I.C.

TWO problems dominated the design and construction procedure for St. Vincent's Hospital in Vancouver. *One:* the Sisters desired to include as many hospital beds as possible in the first unit to be erected. *Two:* the total cost of the first unit must not exceed $160,000.

Since the entire hospital will be a 300-bed institution, it was decided that the side wing should be built first, leaving the main wing, which includes so much administration and office space, for later. This would provide a large number of beds while administration offices could temporarily occupy rooms that would later be converted into four-, two- or single-bed rooms without structural alterations.

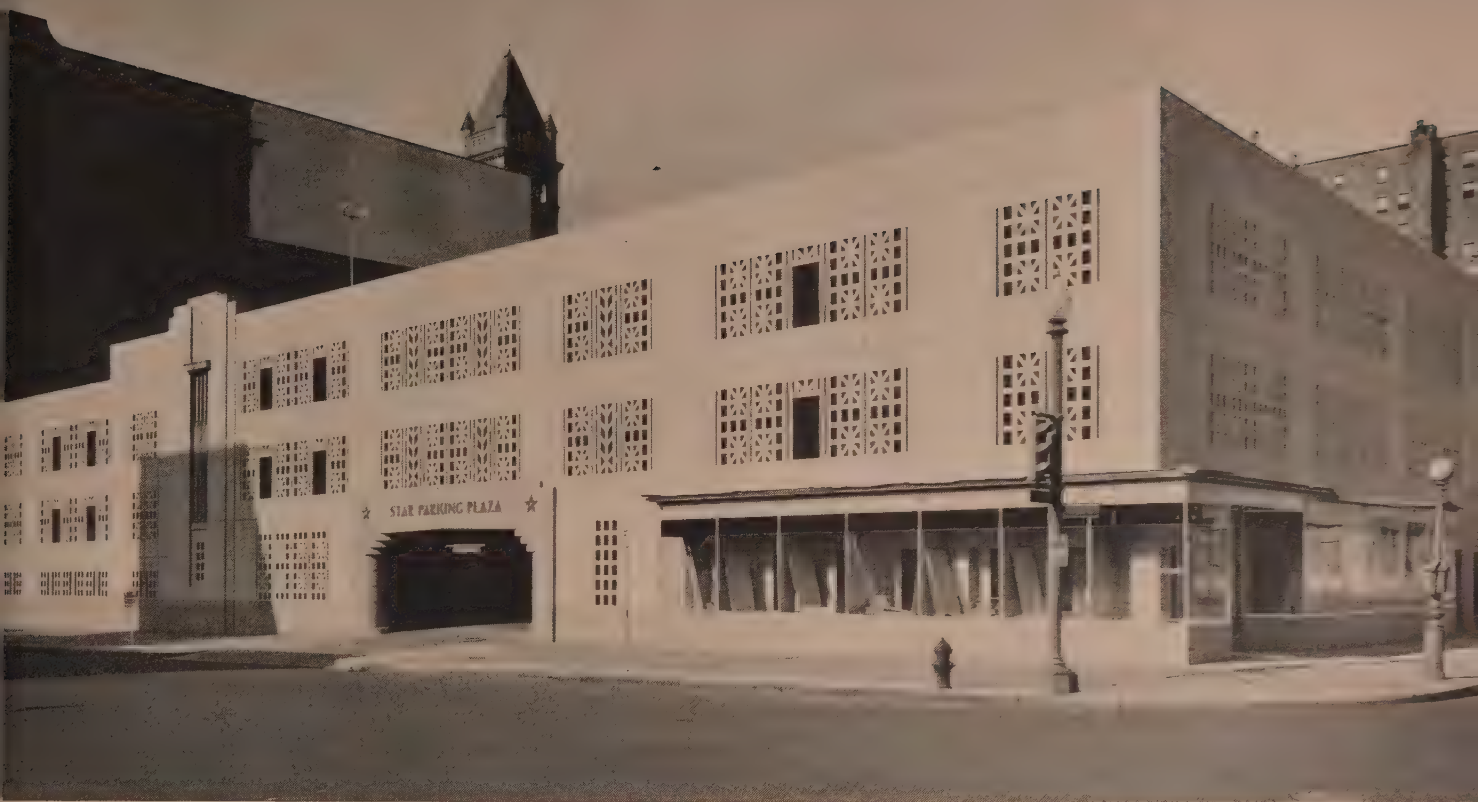
The side wing, as erected, is 160x41 ft., five stories high, and entirely of architectural concrete. The decision to use a modern type of design in concrete was influenced greatly by the need for economy, and it is interesting to note that the building was erected at a cost somewhat below the estimate. All concerned are gratified by that as well as by the excellent results obtained in appearance and structural soundness.

Forming for the walls was 1x6 surfaced boards with the ends splayed at an angle of 35 deg. During construction the forms were kept so tightly braced and so well aligned that the surfaces are relatively smooth under the two coats of white portland cement paint. Concrete was placed by means of "elephant trunks" and external vibrators were used to insure thorough compaction. There was a noticeable absence of small air pockets in the finished walls.

All floors are concrete, with mastic tile finish throughout except in operating rooms, case rooms and toilets which have a ceramic tile finish.

*Gardiner & Mercer, architects, Vancouver, B. C.

In order to provide a maximum number of beds as soon as possible, the side wing of St. Vincent's Hospital, Vancouver, B. C., was built before the administration building. The cost including architects' fees, but excluding hospital furnishings and equipment, was 36½ cents a cu.ft. Gardiner & Mercer, Vancouver, were the architects. E. J. Ryan Contracting Co., Ltd., of Vancouver, was the contractor.



By hanging a curtain of thin precast concrete panels from the floor slabs of a four-deck parking garage, the Washington Star, *Washington, D. C., has an open air garage that appears to be an enclosed structure. Designed by Porter & Lockie, architects, Chas. H. Tompkins Co. was general contractor. The precast panels were manufactured and erected by John J. Earley, architectural sculptor. All are of Washington.*

Garage for the Washington Star

By Irwin S. Porter*, A.I.A.

THE Star Parking Plaza, recently built to augment the facilities of an overcrowded parking lot for the Washington *Star*, Washington, D. C., is not just exactly what it seems. It looks like a finished three-story building; but it is really a four-deck, open-air parking garage.

This bit of gay and decorative deception has its reasons. One was the desire for the economy of simple frame and slab construction. Another was a wish to avoid the stark, raw-boned appearance of an exposed skeleton frame deck structure in an area of high grade office buildings.

The desired effect was achieved by literally hanging a curtain of 2¼-in. precast concrete plain and pierced panels over the skeleton frame of a four-deck reinforced concrete structure. The many grilled openings have no glazing, thus the building is not "enclosed" and many items of equipment essential to enclosed structures, such as sprinklers, are eliminated.

All facing panels, cast in the shop, are made with special aggregates which give the exterior a bright, gleaming appearance. Coarse aggregate used for the slabs is yellow quartz of ¼-in. maximum size. The face of each slab was brushed 24 hours after casting to expose the aggregate, and then lightly etched with acid to clean all remaining cement film from the surfaces.

In general, the panels are 3½x9½ ft., cast with flanges along the top and bottom edges. Except for the parapet, all panels are hung from floor or roof slabs by means of these flanges which are anchored to the structural slabs with dowels. The top flange of each panel is keyed to the bottom

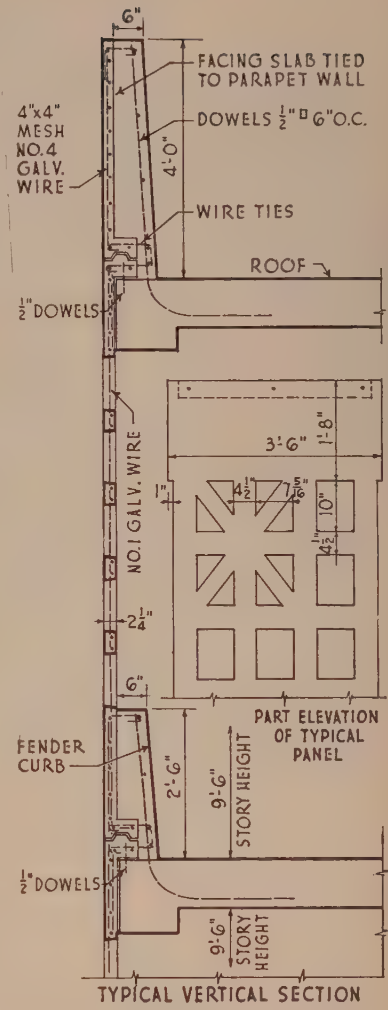
*Porter & Lockie, architects, Washington, D. C.

flange of the panel above. A low fender wall of reinforced concrete built against the inside of the facing curtain for a height of 2 ft. 5¾ in. above floor level in each story, forms a stop for parked cars and protects the thin panels from damage. The parapet is formed by a similar fender wall 4 ft. high, the panels being supported by bearing on third-story panels and secured by anchors in the parapet cóncrete.

These decorative panels were cast face down in wood forms with cores set in the form face to provide the grille openings. Reinforcement for these thin sections comprise 4x4-in. welded mesh, cut and welded into special shapes where openings occur. The panels were thoroughly cured in the shop and speedily erected after the structural frame of the building was completed.

The building as completed appears to have solved all problems. It quadruples the parking space afforded by the old ground level parking lot. It was economical to build. Full architectural embellishment was given to the building, although the many unglazed openings permitted its approval by the District of Columbia building inspectors as an unenclosed structure.

While this method of construction is new for structures of this type, the materials and methods of construction have been used on many other types of buildings. The success of this project should open a new field for the design and construction of open-deck parking structures which are growing in demand in congested city areas.



Details showing method of hanging precast wall panels to floor slabs of garage.

Bathhouse for Blue Island, Ill.

By Godfrey E. Larson*, Architect

MEMORIAL Park in Blue Island, Ill., has been built up and beautified during the past few years as a recreational center. It is the first real park this long established community has had. Ideally situated, it occupies a

*Chicago, Ill.

Two stairways give access to the observation deck of new bathhouse, Blue Island, Ill.

The bathhouse faces a concrete swimming
and Vagtborg Construction Co., the contra

rolling site near the heart of the tow

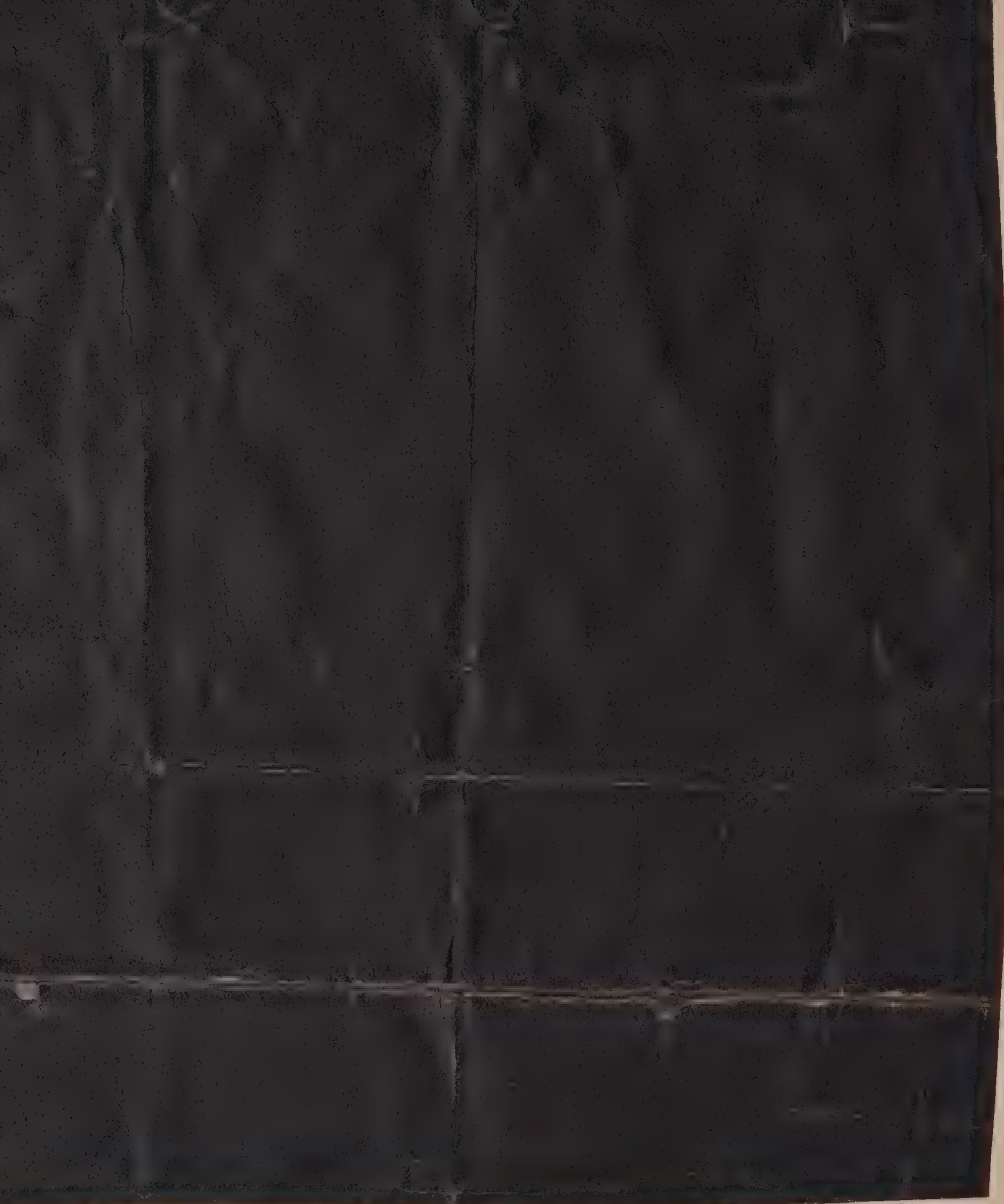
First buildings erected in a comp
scaping and construction were a rein
180 ft. long in front of a football fie
masonry on the hill rising from the
Following this some concrete shuffleb
courts were started. One of the gr
was for a swimming pool and a bat
community realized the answer to th
tion of a carefully designed pool and

The pool, located just below the fiel
with the deep end rectangular and th
curve made of short chords. The po
safely several hundred bathers.

For the sake of harmony with the pool it was reasonable to design the bathhouse in architectural concrete; and to maintain a uniformity of appearance with the stadium which lies on the same axis with the pool, it was decided to use some of the same details that were molded into the stadium walls and columns.

The bathhouse is a low-lying structure 100x50 ft., with a large main entrance on the side opposite the pool and flanked by two concrete stairways leading to the observation roof overlooking the bathing area. Under each stairway is an arched opening to stor-

Modern lines of the building are enriched by details having a classic precedent. Except for a thorough cleaning, there is no other finish treatment.



during the 150th anniversary of the Coast Guard Service. Original design was by J. Milton Dyer, Cleveland architect. Supervision of design and construction was by the Civil Engineer's Office, Cleveland District, U. S. Coast Guard.

Coast Guard Station—Cleveland

By Welland Gay*

(The opinions or assertions contained herein are the private ones of the writer and are not to be construed as official or as representing the opinion of the Coast Guard Service at large.)

THE fourth of August is an important day in the history of the United States Coast Guard. On that day 150 years ago this service, then known as the Revenue Cutter Service, was founded by Alexander Hamilton. During the week of August 4, 1940, the Coast Guard conducted exercises throughout the nation celebrating its 150th birthday. As a part of this celebration, the recently completed Coast Guard Station at Cleveland, Ohio, was dedicated and formally placed in service. The dedicatory address was made by the Commandant, Rear Admiral R. R. Waesche, U. S. Coast Guard.

The Cleveland station is noteworthy as being the only one of its architectural appearance or type of construction. It is located on a filled bulkhead adjacent to the station which it replaced at the end of the West Pier of the Cuyahoga River, where the river enters Lake Erie. A station has been maintained at this point for some 50 years, with a fine record of saving lives and property and enforcing customs and navigation laws.

Preliminary work involved the driving of approximately 800 lin.ft. of sheet piling and filling of the enclosed area.

*Civil engineer, U. S. Coast Guard

Foundations for the buildings were then placed over composite wood and concrete piles driven in the filled area.

Buildings in the unit include a three-track boathouse approximately 78x52 ft. with facilities for handling and housing service boats and equipment; a garage 42x23 ft. for service cars and trucks; and an L-shaped quarters building 130x30 ft., providing quarters for the officer-in-charge and his family and a crew of 22 men. At the center of the "L" is the lookout tower rising to a height of 80 ft. above lake level.

Total cost of the three contracts—bulkheads and fill, foundation piles, and building construction—was $223,226. Work commenced on September 1, 1938 and, except for items of landscaping, was completed on the date of its dedication this past August.

The design of the buildings was carried out with the purpose of expressing in appearance, as closely as practicable, the use for which they were constructed. To do this architectural concrete was selected as a suitable medium for expressing the stability and reliability of a government unit. It was also considered to be the most practical medium for this particular job because of the curves and circular forms of the buildings and tower.

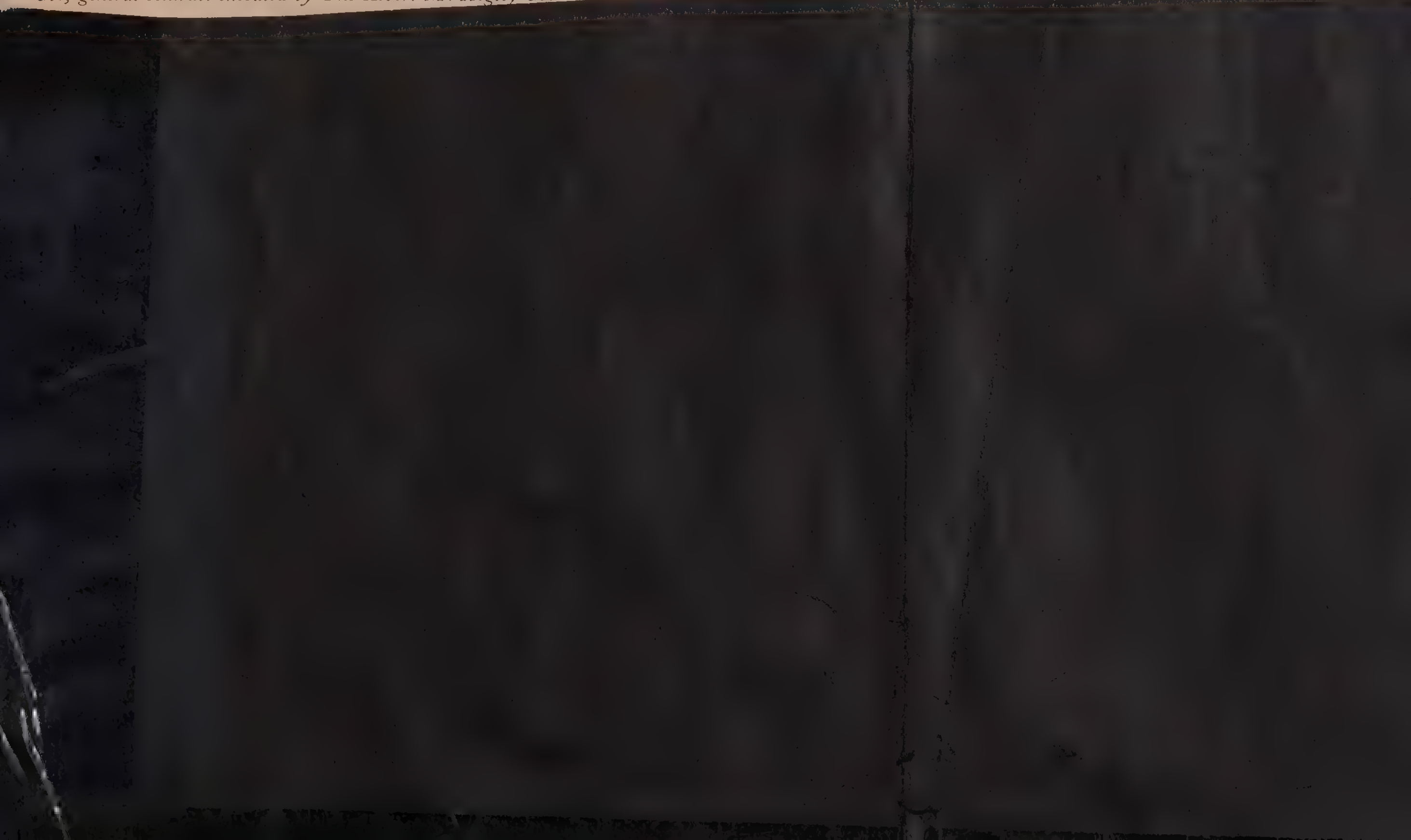
All walls are of concrete, placed without vertical construction joints except at the junction with the circular walls. Horizontal joints, where necessary, were placed at the line of window sills. Ready-mixed concrete was used primarily because of space limitations of the site, and good control was maintained over the mix. Forms used for all exposed surfaces were of ¼-in. plywood backed up solid with tongued and grooved sheathing.

In general, walls are 8 in. thick, reinforced with ⅜-in. temperature steel, 6 in. on centers vertically and 8 in. on centers horizontally. During construction it was found quite difficult to place 8-in. walls due to the height of the lifts and because of the amount of temperature steel as well as column and beam steel in the forms. It is probable that walls of thicker section could have been used with little or no added expense due to greater ease of placing. Mechanical vibration was used to a small extent on all buildings, but thorough spading was relied upon for producing dense, impervious concrete.

Exposed concrete surfaces were finished smooth. After forms were removed a thin grout was spread on the surface with a brush. When this had partially set the surplus was removed and the surface rubbed vigorously with burlap. Since a pure white finish was desired, the buildings were later painted with two coats of white portland cement paint.

The new Cleveland Coast Guard Station is a noteworthy addition to the city's lake front. The unit is a part of the Cleveland District, Captain W. A. Benham, district commander. Supervision of design and construction was by the Civil Engineer's Office, Cleveland District. The original design was by J. Milton Dyer, a Cleveland architect.

General view of station. The buildings are erected on a filled bulkhead. Composite piles for the building foundation were driven by Johnson Foundation Co.; general contract executed by The Albert M. Higley Co.—both of Cleveland.



Alcott School was built as the first project in a comprehensive program for modernizing the Chanute, Kan., school system. Architectural concrete was selected as a modern material offering maximum economy. Designed by Joseph Radotinsky of Kansas City, Kan., it was built by Bowers & Ingram, Topeka contractors.

Modern School for Chanute, Kansas

more or less to itself. Near the main entrance to the building is the principal's office, teachers' room and the clinic.

The exterior treatment of the concrete offered a number of possibilities. A belt course up to window sill height is carried entirely around the building. Above this the walls are marked off into panels of approximately 2x3 ft. through the use of small triangular strips in the form faces. At window sills and heads a deeper, heavier rustication accentuates the horizontal lines. A deeply recessed band at the coping was formed by the use of plaster waste molds.

A concrete flower box adds a colorful touch to a long wall under a glass brick window area.

The architectural treatment of the exposed concrete beams in the roof over the auditorium fits the structural design very closely. The ceiling was given a bright paint coat with a stenciled design. This, combined with the drapes, stage curtain, and the exposed concrete ashlar walls, makes a most pleasant room. The lightweight concrete units used for the walls aid materially in acoustic control in the auditorium.

Concrete mixtures were carefully watched throughout construction and, as a result, all decorative features came clean and sharp from the forms. After the walls were erected they were washed down with soap suds. No further treatment was given and today the building, after several months of exposure, has bleached out to a light grey color which imparts a dignity of appearance seldom obtained in a structure of this size.

Alcott School is entirely concrete from foundations to roof. It would seem that no building could be more safe; yet no attractiveness has been sacrificed to gain this safety advantage, nor has the cost been increased very much over that of buildings offering far fewer protective features.

Form panels were arranged to keep the vertical and horizontal construction joints continuous. This produces a definite coursed effect. After forms were stripped, the walls were washed down thoroughly with soap and water. No other treatment has been used.

School—Dothan, Ala.

By Charles H. McCauley*, A.I.A.

FEW of the surprises in the building industry are so pleasant as that which occurred during the designing and construction of the new high school at Dothan, Ala. Here is how it happened:

The Dothan board of education, through bond issue and aid from the Public Works Administration, appropriated a sum of more than $200,000 for a high school building and commissioned our firm to do the design. We were told to get as much in school facilities as possible for this sum, for additional space was badly needed. We designed the building for architectural concrete, and then added an alternate in masonry. This was done because in 1938 no concrete building of comparable size had been erected under contract in this region, and there were no yardsticks for measuring costs. We submitted the plans for bids with our fingers crossed, almost fearful that we had designed too large a structure for the money involved.

Our pleasure and amazement can be imagined when we learned that the low bid on architectural concrete was $166,950—far below the fund limit and $20,000 under the masonry alternate. Consultation with the board resulted in permission to extend the dimensions of the building in all directions except height—adding 20 ft. to the length of the auditorium and the gymnasium, and 15 ft. to the three-story classroom wing. The final cost was $200,000. It is now a complete building, modern in design and plan, spacious and comfortable. Allowance is made for future growth.

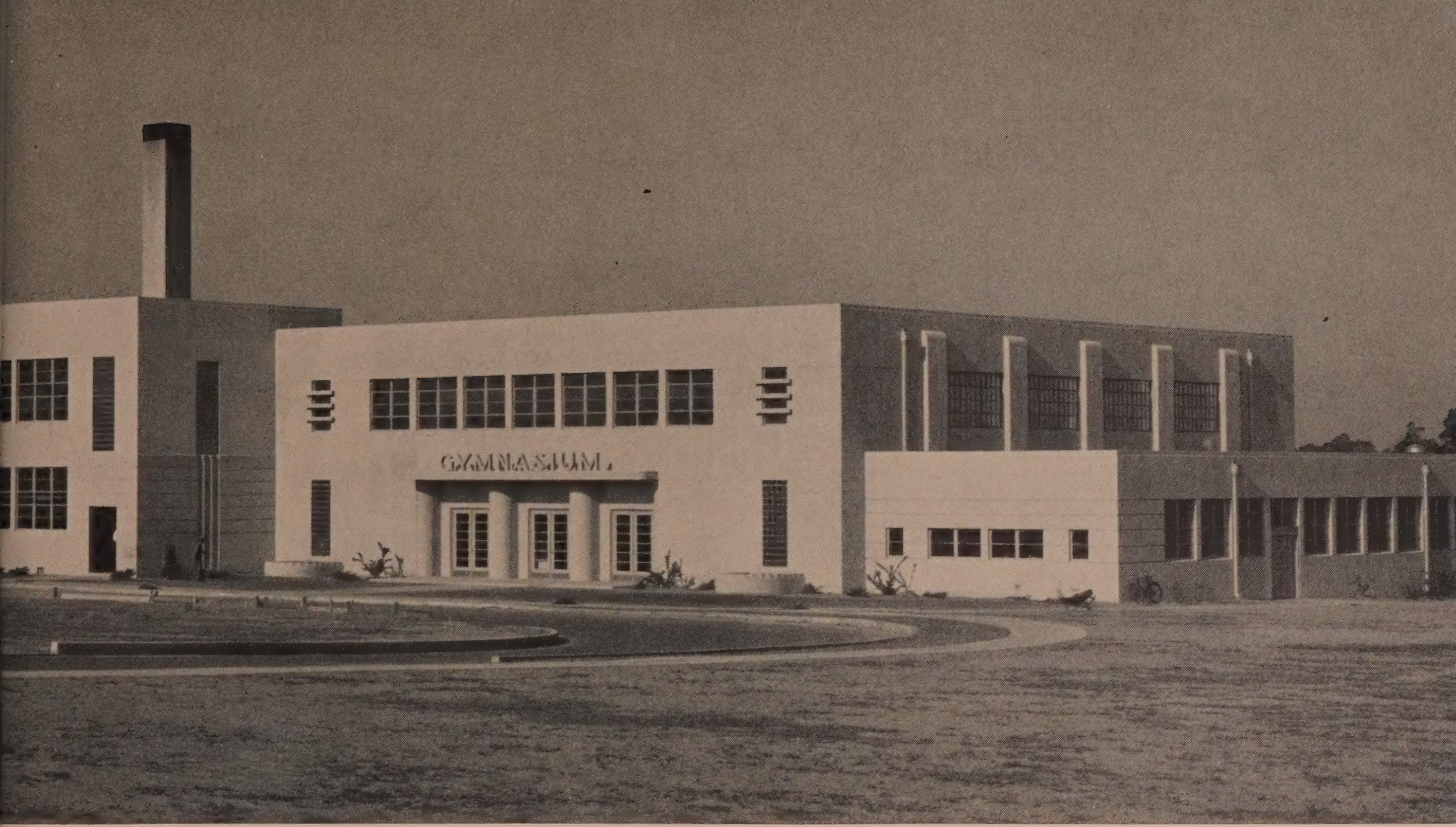
*Birmingham, Ala.

Because the first bid on concrete for the Dothan, Ala., high school was g bid by $20,000. Charles H. McCauley, of Birmingham, was the architect

In the main facade are the entranceways to three different functional units, the auditorium at left, the classroom section at center, and the gymnasium with its one-story shoproom appendage at right. Each unit is allowed to express its purpose in the exterior design, with windows arranged where needed without regard to preconceived ideas of balanced masses and details. Harmony depends upon the use of concrete as a flowing, continuous material of uniform texture and color. The result is most satisfactory.

Concrete walls in the basement are 12 in. thick; 10 in. in first-story walls, and 9 in. above. Forming material for main facade and two sides of the building was ⅝-in. plywood. Board forms were

Details were kept to the simplest of molded forms and openings were arranged for maximum illumination rather than exterior effect.

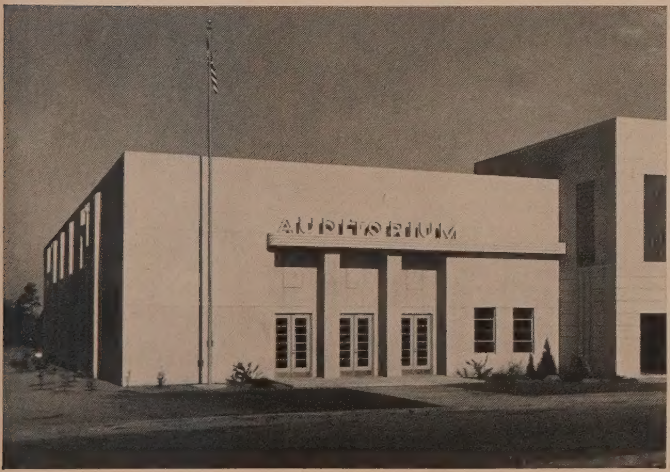


er the architect's estimate and available funds, it was possible to enlarge the school in all dimensions except height. Concrete was under lowest alternate masonry
hurch Construction Co., of Montgomery, was the contractor.*

used for rear walls where a smooth surface was not desired. After all forms were removed the front wall surfaces were rubbed down with portland cement grout to a smooth, almost white finish.

Floors and roof of the building are of pan joist construction, finished with asphalt tile in corridors and with wood in classrooms. Wall finish is generally plaster on metal lath.

No money was spent on ornamentation. The details are



The auditorium, located to the left of the main portion of the building, has a dignified, formal facade.

At the other end of the building is the gymnasium with bolder lines.

simple and appropriate motifs that are easy to form by ordinary methods. The only complicated forms used were for the lettering, which was precast and set in place over auditorium and gymnasium canopies. There was considerable use of glass brick because it was useful and appropriate.

Most of the construction joints coincide with very narrow horizontal grooves. Because of the great length of the main facade, expansion joints are located between the main building and the auditorium and gymnasium.

Some Concrete for Missouri

By Hal Lynch*, Architect

IN the past five years I have designed and watched the construction of 16 architectural concrete buildings in many towns and cities of Missouri. During this time I have seen concrete come from nowhere to wide public acceptance in my state; and I have seen workers who knew little of construction work and less about concrete, develop into concrete craftsmen. The experiences of these years explain why today I enjoy designing in concrete. This is no doubt the experience of many other designers and accounts for the amazing rise of concrete as an architectural medium.

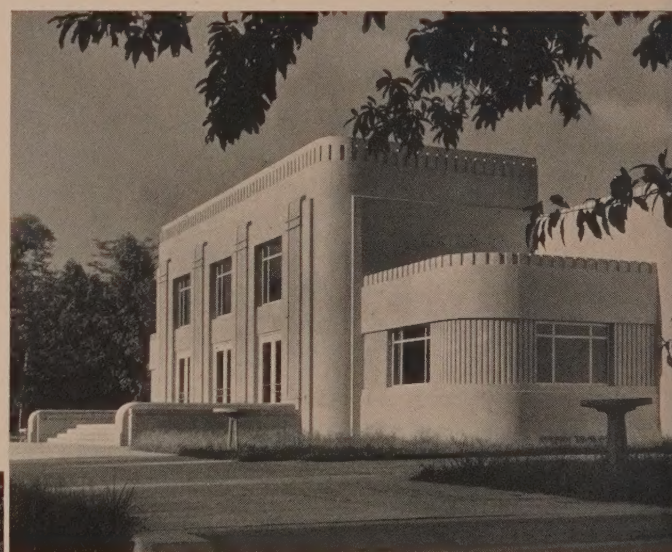
Such an amount of work in concrete was naturally carried on with considerable experimenting with the design possibilities of the material. This could go on forever, for concrete apparently has no limit to the variety of shapes, forms and textures it can be made to assume. However, certain methods of treating surfaces, arranging forms, and molding detail have gained preference through use, although I have avoided standardizing any details or textures to the point where one could type my work and say: "That is a Hal Lynch job." Concrete encourages originality.

I like untreated concrete surfaces, that is, exposed concrete without paint, rubbing or bush hammering—although I have used these methods with satisfactory results. This preference led me to be one of the first, I believe, to use the mat surface of Presdwood as a form liner. The resulting screen texture produces an interesting surface that minimizes the effects of tie rod holes and air bubbles. It cleans down well and improves with age.

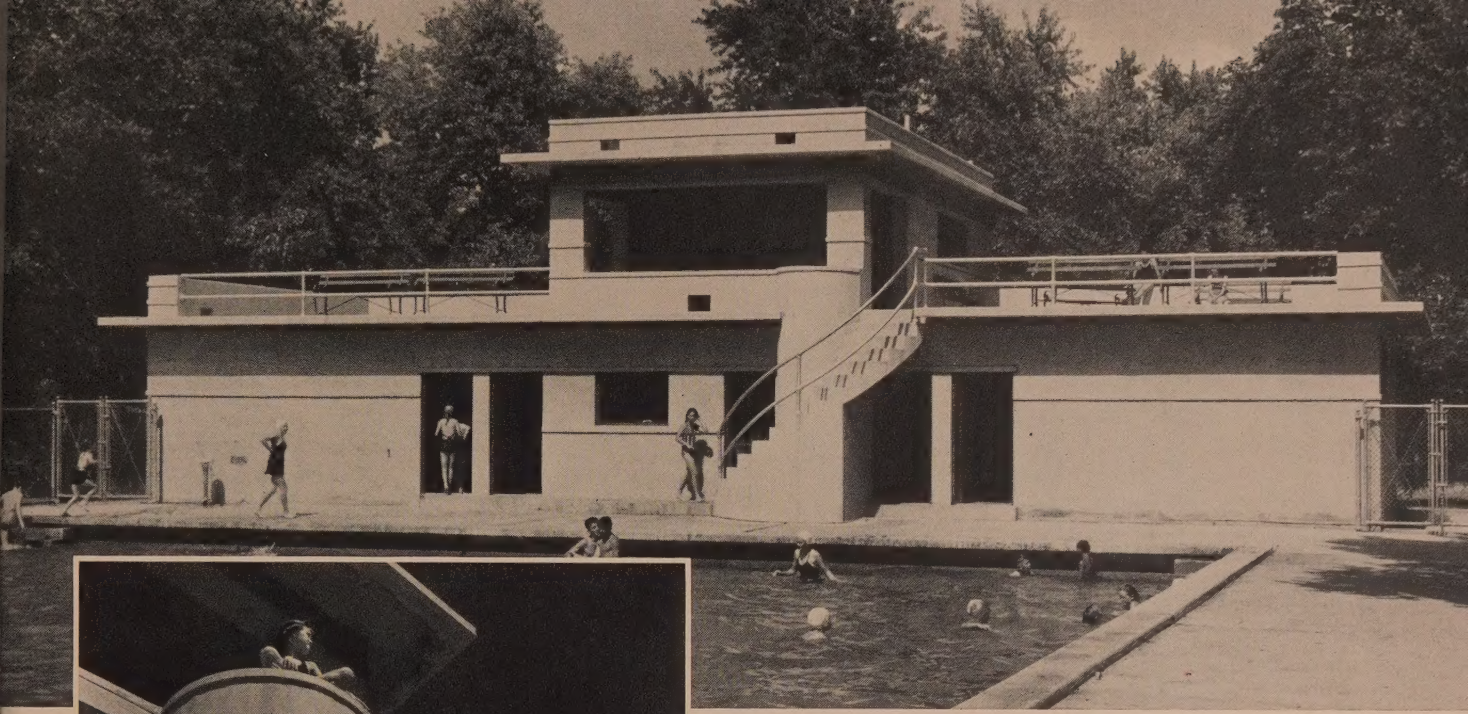
I have adopted bench forms exclusively. Well built forms can be used many times if they are properly cleaned and oiled after each use. Since many of my jobs were WPA projects and forming material was frequently scarce, I have seen some form material reused as many as 20 times.

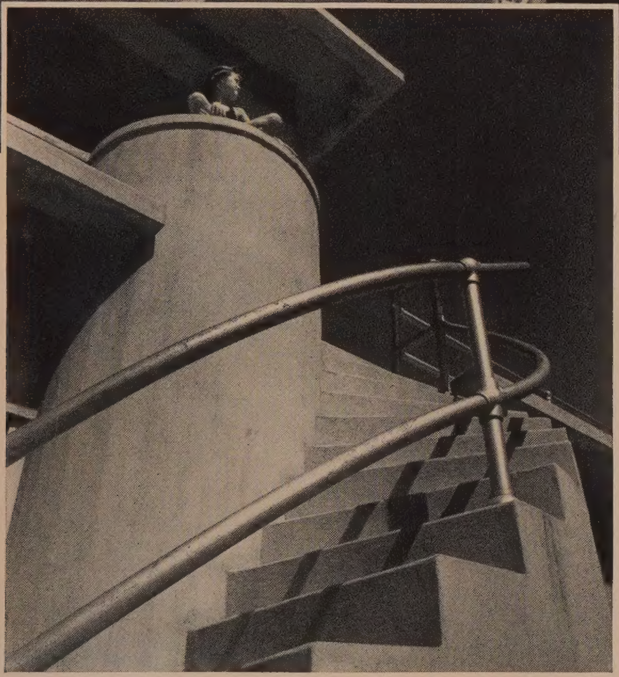
Construction joints should coincide with horizontal features in the design. These details, however, need not be so pronounced as to dominate the architecture.

*Clayton, Mo.

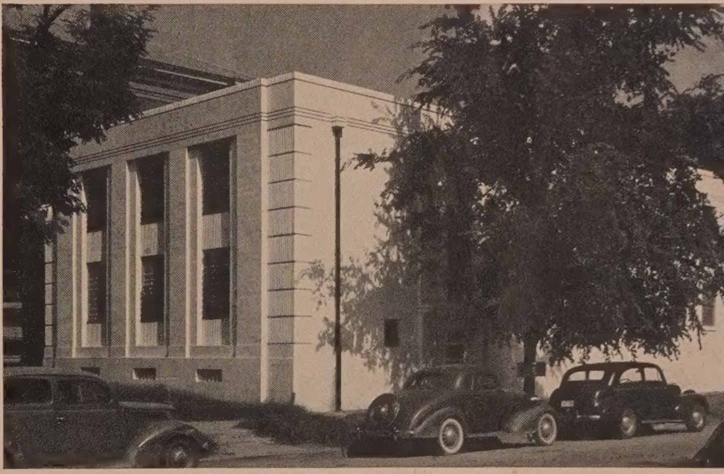


One of Hal Lynch's jobs is the Municipal Arena, Cape Girardeau, Mo. Bleachers in the main hall seat 1,600. When used as an auditorium, seats on the main floor raise capacity to 3,100. Along the rear of the building is a concrete stadium.



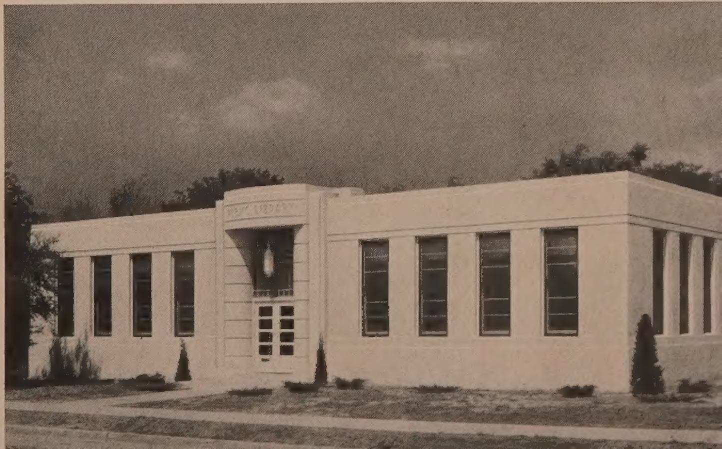


A gracefully curving stairway adds interest to Mr. Lynch's design for the municipal bathhouse at Farmington, Mo.



Corrugated iron was used to form the fluting used in spandrels, copings and quoins of Mississippi County Jail, Charleston, Mo.

Public Library, Caruthersville, Mo., is one of the few Lynch jobs that has painted exterior.



One of the great economies in concrete is the ability to use repeat motifs in ornament from one original mold. This also tends to make the decorative detail more simple and orderly.

Under conditions set up in WPA projects, it has often been necessary to start work without an experienced concrete man on the job. This has never been an ultimate disadvantage, because architectural concrete is a new technique that must be learned from scratch, and a fresh viewpoint is often helpful.

I have made it a habit to keep close supervision over all of my jobs. This has meant a great many miles of travel every week, but it has resulted in new knowledge of concrete gained on each job, with consequent improvement in design and workmanship.